

REMARKS

Prior to entry of this amendment, claims 1-32 are pending in the subject application, of which claims 14-21 stand withdrawn from consideration. By the instant amendment, claims 1, 22, 25, 26 and 28-30 are amended to more particularly claim the subject matter of the present invention, and claims 11 and 27 are cancelled. No new matter is added by the instant amendment. Claims 1, 25 and 26 are independent.

Applicants note with appreciation the Examiner's acknowledgement of applicants' claim for foreign priority and receipt of a certified copy of the priority document.

Applicants also note with appreciation the Examiner's consideration of applicants' Information Disclosure Statements filed June 30, 2003, and April 15, 2004.

Claims 1-10, 12, 13, 22-26 and 28-32 are presented to the Examiner for further consideration on the merits.

A. Introduction

In the outstanding Office action, mailed October 10, 2006, the Examiner objected to the drawings under 37 C.F.R. § 1.83(a); rejected claims 1, 2, 6, 7 and 12 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,874,516 to Matsuno et al. (hereinafter referred to as "the Matsuno et al. reference"); rejected claims 3-5 under 35 U.S.C. § 103(a) as being unpatentable over the Matsuno et al. reference in view of U.S. Patent No. 6,103,096 to Datta et al. (hereinafter referred to as "the Datta et al. reference"); rejected claim 8 under 35 U.S.C. § 103(a) as being unpatentable over the Matsuno et al. reference in view of U.S. Patent No. 5,779,816 to Trinh (hereinafter referred to as "the Trinh reference"); rejected claims 9-11 under 35 U.S.C. § 103(a) as being unpatentable over the Matsuno et al. reference in view of the U.S. Patent No. 6,764,385 to Boumerzoug et al. (hereinafter referred to as "the Boumerzoug et al. reference"); rejected claim 13 under 35

U.S.C. § 103(a) as being unpatentable over the Matsuno et al. reference in view of U.S. Patent No. 6,516,816 to Husain et al. (hereinafter referred to as “the Husain et al. reference”); rejected claims 22-27, 29 and 30 under 35 U.S.C. § 103(a) as being unpatentable over the Matsuno et al. reference in view of JP 2001009387 to Okamoto (hereinafter referred to as “the Okamoto reference”); and rejected claims 28, 31 and 32 under 35 U.S.C. § 103(a) as being unpatentable over the Matsuno et al. reference and the Okamoto reference and further in view of U.S. Patent No. 5,862,823 to Kamikawa et al. (hereinafter referred to as “the Kamikawa et al. reference”).

B. Asserted Objection to the Drawings

In the outstanding Office action, the Examiner objected to the drawings under 37 C.F.R. § 1.83(a), asserting that “the fourth plurality of nozzles as described in the specification and claims must be shown or the feature(s) canceled from the claim(s).” *Office action mailed October 10, 2006, page 2.* By the instant amendment, claim 11 is cancelled, without prejudice. Claim 11 is the only claim that recites a plurality of fourth nozzles. In view of the cancellation of claim 11, applicants respectfully submit that the objection to the drawings is traversed. Therefore, applicants respectfully request that this objection be reconsidered and withdrawn.

C. Asserted Anticipation Rejection

In the outstanding Office action, the Examiner rejected claims 1, 2, 6, 7 and 12 under 35 U.S.C. § 102(e) as being anticipated by the Matsuno et al. reference. By the instant amendment, claim 1 is amended. No new matter is added, and support for the amendment to claim 1 can be found in the application as originally filed, e.g., at paragraphs [0041]-[0044] and FIG. 1. Applicants respectfully submit that the Matsuno et al. reference fails to anticipate claim 1 for at least the reasons set forth below.

In rejecting claim 1, the Examiner asserted that the Matsuno et al. reference teaches a wafer cleaning apparatus having a plurality of holders securing the edge of the wafer and rotating, a first plate facing a first surface having a plurality of first nozzles, and a second plate facing a second surface and having a plurality of second nozzles. *Office action mailed October 10, 2006, page 3.* However, claim 1 presently recites that a wafer load chamber and a wafer unload chamber are connected to respective first and second sidewalls of a processing chamber. Claim 1 further recites that the holders and the first plate are connected to each other, and that the holders and the first plate move from the wafer load chamber into the processing chamber, and from the processing chamber into the wafer unload chamber to load and unload the wafer. Applicants respectfully submit that these aspects of claim 1 are not disclosed, or even suggested, by the Matsuno et al. reference, and thus the Matsuno et al. reference fails to anticipate claim 1. Accordingly, applicants respectfully submit that claim 1, as well as claims 2, 6, 7 and 12 depending therefrom, are allowable over the Matsuno et al. reference. Therefore, applicants respectfully request that this rejection be reconsidered and withdrawn.

D. Asserted Obviousness Rejection of Claims 3-5

In the outstanding Office action, the Examiner rejected claims 3-5 under 35 U.S.C. § 103(a) as being unpatentable over the Matsuno et al. reference in view of the Datta et al. reference. Claims 3-5 ultimately depend from claim 1, which, as discussed above, is believed to be allowable over the Matsuno et al. reference. Applicants respectfully submit that the Datta et al. reference fails to provide the teachings noted above as missing from the Matsuno et al. reference. Accordingly, applicants respectfully submit that claims 3-5 are allowable over the proposed combination of the Matsuno et al. and Datta et al. references for

at least the reasons that claim 1 is allowable. Therefore, applicants respectfully request that this rejection be reconsidered and withdrawn.

E. Asserted Obviousness Rejection of Claim 8

In the outstanding Office action, the Examiner rejected claim 8 under 35 U.S.C. § 103(a) as being unpatentable over the Matsuno et al. reference in view of the Trinh reference. Claim 8 depends from claim 1, which, as discussed above, is believed to be allowable over the Matsuno et al. reference. Applicants respectfully submit that the Trinh reference fails to provide the teachings noted above as missing from the Matsuno et al. reference. Accordingly, applicants respectfully submit that claim 8 is allowable over the proposed combination of the Matsuno et al. and Trinh references for at least the reasons that claim 1 is allowable. Therefore, applicants respectfully request that this rejection be reconsidered and withdrawn.

F. Asserted Obviousness Rejection of Claims 9-11

In the outstanding Office action, the Examiner rejected claims 9-11 under 35 U.S.C. § 103(a) as being unpatentable over the Matsuno et al. reference in view of the Boumerzoug et al. reference. Claim 11 has been cancelled, and the rejection thereof is moot. Claims 9 and 10 depend from claim 1, which, as discussed above, is believed to be allowable over the Matsuno et al. reference. Applicants respectfully submit that the Boumerzoug et al. reference fails to provide the teachings noted above as missing from the Matsuno et al. reference. Accordingly, applicants respectfully submit that claims 9 and 10 are allowable over the proposed combination of the Matsuno et al. and Boumerzoug et al. references for at least the reasons that claim 1 is allowable. Therefore, applicants respectfully request that this rejection be reconsidered and withdrawn.

G. Asserted Obviousness Rejection of Claim 13

In the outstanding Office action, the Examiner rejected claim 13 under 35 U.S.C. § 103(a) as being unpatentable over the Matsuno et al. reference in view of the Husain et al. reference. Claim 13 ultimately depends from claim 1, which, as discussed above, is believed to be allowable over the Matsuno et al. reference. Applicants respectfully submit that the Husain et al. reference fails to provide the teachings noted above as missing from the Matsuno et al. reference. Accordingly, applicants respectfully submit that claim 13 is allowable over the proposed combination of the Matsuno et al. and Husain et al. references for at least the reasons that claim 1 is allowable. Therefore, applicants respectfully request that this rejection be reconsidered and withdrawn.

H. Asserted Obviousness Rejection of Claims 22-27, 29 and 30

In the outstanding Office action, the Examiner rejected claims 22-27, 29 and 30 under 35 U.S.C. § 103(a) as being unpatentable over the Matsuno et al. reference in view of the Okamoto reference. Applicants respectfully submit that the proposed combination of the Matsuno et al. and Okamoto references fails to render claims 22-27, 29 and 30 unpatentable for at least the reasons set forth below.

i. Asserted Obviousness Rejection of Claims 22-24

Claims 22-24 depend from claim 1, which, as discussed above, is believed to be allowable over the Matsuno et al. reference. Applicants respectfully submit that the Okamoto reference fails to provide the teachings noted above as missing from the Matsuno et al. reference. Accordingly, applicants respectfully submit that claims 22-24 are allowable over the cited prior art references.

By the instant amendment, claim 22 is amended to recite various features of commercial importance including, *inter alia*, subject matter similar to that recited in original

claim 28. However, applicants respectfully submit that the Examiner failed to set forth a *prima facie* case of obviousness with respect to claim 22, notwithstanding the instant amendment.

Prior to the instant amendment, claim 22 recited,

a first driving part for rotating the wafer;
a second driving part for swinging the plurality of holders toward the peripheral portion of the wafer so that the plurality of holders can contact and secure the peripheral portion of the wafer; and
a plurality of connecting rods for connecting the second driving part to the plurality of holders.

However, applicants respectfully submit that the Examiner failed to point out where in the cited prior art references the particular features recited in claim 22 can be found. In the outstanding Office action, the Examiner asserted,

Matsuno . . . does not disclose the first driving part or second driving part rotating the first and second plates in a direction opposite to the wafer. Okamoto discloses the top and bottom plates rotating in a different direction than the wafer. Although the drive sources are not shown, it is apparent that the apparatus parts could not rotate without a driving mechanism and would be inherently present. It would also be inherent that there would be a driving part which controlled the access to the wafer. The top plate or bottom plate must be movable to have this access and also the wafer holders must be able to be separated from the wafer. Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to modify Matsuno with Okamoto for the benefit of accurately controlling the cleaning action.

(Office action mailed October 10, 2006, pages 5-6).

Contrary to the Examiner's assertion, applicants respectfully submit that the proposed combination of the Matsuno et al. and Okamoto references fails to disclose or suggest the features originally recited in claim 22. For example, claim 22 recites "a second driving part for swinging the plurality of holders toward the peripheral portion of the wafer . . . and a plurality of connecting rods for connecting the second driving part to the plurality of holders." However, the Examiner failed to identify any such features in any of the cited prior

art references, nor are features disclosed therein. Accordingly, no *prima facie* case of obviousness has been established.

Not only is claim 22 allowable over the Matsuno et al. and Okamoto references, by the instant amendment, claim 22 is amended to further recite that the first plate connecting to the holders moves slidably along a ball guide extending from the wafer load chamber into the wafer unload chamber through the processing chamber, in similar fashion to original claim 28. With respect to the similar features recited in claim 28, in the outstanding Office action the Examiner relied on the Kamikawa et al. reference as suggesting these features. *See the Office action mailed October 10, 2006, page 6.* However, the Kamikawa et al. reference fails to disclose, or even suggest, “a ball guide extending from the wafer load chamber into the wafer unload chamber through the processing chamber,” as presently recited in claim 22. Therefore, applicants respectfully submit that claim 22 is patentable over the cited prior art references for this reason as well.

ii. Asserted Obviousness Rejection of Claim 25

Independent claim 25 is amended by the instant amendment. Claim 25 presently recites that a wafer load chamber and a wafer unload chamber are connected to respective first and second sidewalls of a processing chamber. Claim 25 further recites that the holders and the first plate are connected each other, and that a sixth driving part transfers the holders and the first plate from the wafer load chamber to the wafer unload chamber through the processing chamber. No new matter is added, and support for the amendment to claim 25 can be found in the application as originally filed, e.g., at paragraphs [0041]-[0044] and FIG. 1. Applicants respectfully submit that these aspects of claim 25 are neither disclosed nor suggested by the proposed combination of the Matsuno et al. and Okamoto references.

In particular, applicants respectfully submit that the Matsuno et al. reference fails to disclose or suggest these aspects of claim 25, as discussed above regarding claim 1.

Applicants further submit that neither the Okamoto reference nor any other cited prior art reference discloses or suggests the subject matter that is missing from the Matsuno et al. reference. Accordingly, applicants respectfully submit that claim 25 is allowable over the cited prior art references.

iii. Asserted Obviousness Rejection of Claims 26, 27, 29 and 30

Independent claim 26 is amended by the instant amendment. Claim 26 incorporates the subject matter of claim 27. Accordingly, claim 27 is cancelled and the rejection thereof is moot. Claim 28 is amended to revise the dependency thereof.

Claim 26 presently recites that a wafer load chamber and a wafer unload chamber are connected to respective first and second sidewalls of a processing chamber. Claim 26 further recites that the holders are connected to the first plate, and that a third driving part moves the first plate and the plurality of holders into the processing chamber in order to load the wafer, and moves the cleaned wafer from the processing chamber into the wafer unload chamber. Applicants respectfully submit that these aspects of claim 26 are not disclosed or suggested by the cited prior art references.

In the outstanding Office action, the Examiner asserted that claim 27, the subject matter of which is now recited in claim 26, is obvious in view of the Matsuno et al. and Okamoto references. Applicants respectfully disagree, and submit that neither the Matsuno et al. nor the Okamoto reference, whether alone or in combination, discloses or suggests the subject matter that was originally recited in claim 27. For example, neither reference discloses or suggests a wafer load chamber and a wafer unload chamber are connected to respective first and second sidewalls of a processing chamber, as presently recited in claim

26. Further, neither reference discloses or suggests a third driving part moves the first plate and the plurality of holders into the processing chamber in order to load the wafer, and moves the cleaned wafer from the processing chamber into the wafer unload chamber, as presently recited in claim 26. In addition, applicants note that the Examiner failed to identify any portion of the cited prior art references that purportedly discloses or suggest this subject matter. Accordingly, applicants respectfully submit that claim 26 is allowable over the cited prior art references. Claims 29 and 30 depend from claim 26 and are believed to be similarly allowable.

In view of the above, applicants respectfully submit that claims 22-26, 29 and 30 are allowable over the cited prior art references. Therefore, applicants respectfully request that this rejection be reconsidered and withdrawn.

I. Asserted Obviousness Rejection of Claims 28, 31 and 32

In the outstanding Office action, the Examiner rejected claims 28, 31 and 32 under 35 U.S.C. § 103(a) as being unpatentable over the Matsuno et al. reference and the Okamoto reference and further in view of the Kamikawa et al. reference. Claims 28, 31 and 32 depend ultimately or directly from claim 26, which, as discussed above, is believed to be allowable over the proposed combination of the Matsuno et al. and Okamoto references.

Additionally, with respect to the asserted rejection of claim 28, the Examiner identified a horizontal screw mechanism 140 in the Kamikawa et al. reference, and asserted that it would be obvious to modify this element to arrive at the subject matter recited in claim 28. *Office action mailed October 10, 2006, page 6, citing the Kamikawa et al. reference, col. 6, lines 4-15.* Applicants respectfully disagree.

The Kamikawa et al. reference fails to disclose, or even suggest, “a ball guide extending from the wafer load chamber into the wafer unload chamber through the

processing chamber,” as recited in claim 28. The horizontal screw mechanism 140 in the Kamikawa et al. reference does not extend from a wafer load chamber into a wafer unload chamber through a processing chamber, as recited in claim 28. Indeed, the horizontal screw mechanism 140 in the Kamikawa et al. reference is far too small to extend out of any processing chamber described therein. Further, the horizontal screw mechanism 140 is oriented in the Y-axis direction, which is orthogonal to the X-axis arrangement of processing stations 61-69 (see FIG. 1 of the Kamikawa et al. reference). Further, the Examiner’s proffered motivation to modify the teachings of the Matsuno et al. and Okamoto references by combining them with the Kamikawa et al. reference (“to provide vertical movement”) bears no relation to the subject matter recited in claim 28.

In view of the above, applicants respectfully submit that the Kamikawa et al. reference fails to provide the teachings noted above as missing from the Matsuno et al. and Okamoto references. Accordingly, applicants respectfully submit that claims 28, 31 and 32 are allowable over the proposed combination of the Matsuno et al., Okamoto and Kamikawa et al. references for at least the reasons that claim 26 is allowable. Therefore, applicants respectfully request that this rejection be reconsidered and withdrawn.

J. Conclusion

If the Examiner believes that additional discussions or information might advance the prosecution of the instant application, the Examiner is invited to contact the undersigned at the telephone number listed below to expedite resolution of any outstanding issues.

In view of the foregoing amendments and remarks, reconsideration of this application is earnestly solicited, and an early and favorable further action upon all the claims is hereby requested.

Respectfully submitted,

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Date: February 12, 2007


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PETITION and
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This document and any concurrently filed papers are believed to be timely. Should any extension of the term be required, applicant hereby petitions the Director for such extension and requests that any applicable petition fee be charged to Deposit Account No. 50-1645.

If fee payment is enclosed, this amount is believed to be correct. However, the Director is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account No. 50-1645.

Any additional fee(s) necessary to effect the proper and timely filing of the accompanying-papers may also be charged to Deposit Account No. 50-1645.